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ABSTRACT

This study evaluated the multi-use concept and impact of 30 microcomputers in 2 laboratories of 15 microcomputers each, which were placed in 8 Vancouver, British Columbia, elementary schools for 5 weeks each between January and June 1983. Approximately 2,780 elementary students and 120 elementary teachers, 300 district teacher inservice participants, and 90 night school students were exposed to the microlabs. Feedback on school use, staff professional development, night school, and general issues was obtained through small discussion groups in four pilot schools and through surveys in the remaining four schools. The host school teachers and administrators, the inservice instructors and participants, and the night school instructors and students all reported having a successful experience with the microlabs. Teachers and administrators of the host schools expressed a desire to keep the microlabs and were anxious to know when the microlabs would return to their schools. This report includes a detailed description of the study and three appendices reporting the reactions of the three groups of microlab users. (LMM)

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A SPECIAL REPORT TO THE DEPUTY SUPERINTENDENT

regarding

THE IMPACT OF THE MICROCOMPUTER LABS

1983 JANUARY TO JUNE

SR093

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Program Resources
Vancouver School Board

1983 September

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INTRODUCTION

PURPOSE

The assessment of the impact of the microcomputer labs was proposed to evaluate both the multi-use concept and the programs offered. The evaluative data collected were reported as feedback to the program managers during the six month period since the microlabs' inception, and incorporated into this report when data collection was completed. In this way, the evaluation was both formative and summative.

DESCRIPTION OF THE MICROCOMPUTER LABS

The two labs of 15 microcomputers each were arranged in five clusters of three terminals. Each cluster shared a double disk drive and printer. The hardware included 30 Commodore 8032 microcomputers, 10 CBM 4040 disk drives and 10 CBM 4022 printers. Tables were specifically constructed for the microlabs.

DESCRIPTION OF THE MULTI-USE CONCEPT

To allow for the greatest exposure, the labs were designed for multi-use. Each microcomputer lab was placed in an elementary school for five weeks. During that time, teachers exposed their students to the microcomputers using the VSB K-7 computer curriculum during the school day (9-3), the microlab was available for teacher professional development--either organized workshops or "free" time--from 3-6 and night school made use of the microcomputer from 7-10 (and some Saturdays). At the end of the five-week period, the labs were moved on to other elementary schools where similar exposure occurred.

DESCRIPTION OF THE MICROCOMPUTER PROGRAMS

The VSB K-7 microcomputer curriculum - Microcomputers in Education (Elementary) was written to define and express the range of computer literacy components. It was primarily a program planning resource. This resource guide outlined goals and objectives and generally suggested applications that allow for integration into math, science, social studies and language arts. The curriculum units developed for the microlab offered developed examples of the applications described in the resource guide. The units involved primary and intermediate awareness packages as well as math, science and social studies packages at the intermediate level. A word processing kit was also included. Teachers' manuals, students' guides and diskettes were prepared for the microlab use. Teachers were introduced to the microlab and computer curriculum through a short inservice session. It was anticipated that those teachers who were unfamiliar with microcomputers would have, through the use of the curriculum unit(s) with their students, also experienced heightened awareness.

.....2

Staff professional development could have occurred informally, with teachers preparing between the hours of 3 and 6 for classroom activities or formally, with teachers involved in District workshops. One District program involved approximately 60 staff per session taking one of two options--an Introduction to Microcomputers or Beginning Basic Programming--scheduled for two hours once per week on one of two evenings for four consecutive weeks. Curricula were developed for these two workshops. Word processing was offered to approximately 30 staff per session for three hours once per week for three weeks. Programs were repeated as demand required. Other workshops were also offered.

Night school utilized the microcomputer labs four nights per week for three of a four part program on data processing. An introductory course to microcomputers and two basic programming courses (these three utilized the lab) were offered. Each course spanned ten sessions--twice per week for five weeks. Instructors' manuals written for the Burnaby School Board were adapted for Vancouver. The process had been initiated to have these courses certified by the DPMA. The labs were also utilized in the Saturday - Night School In One Day - program; two six-hour complete courses were offered. Courses were repeated as demand required.

RESEARCH QUESTIONS POSED

The evaluation study was intended to answer the following questions posed concerning the impact of the microcomputer labs.

9-3 (School Use)

How were the labs used? By whom? For how long? Doing what?
What was the extent of contact of teachers with the lab?
What problems were experienced in dealing with the hardware and software?
What was the impact on the students? What was the impact on the teachers?
What happened when the lab left?

3-6 (Staff PD)

How were the labs used? By whom? For how long? Doing what?
What were the inservice needs/expectations of the participants? Were these needs/expectations met by the inservice they received?

7-10 (Night School)

How were the labs used? By whom? For how long? Doing what?
Did the location, timing, physical arrangement, class size and equipment pose any problems for night school?
How satisfactory were the courses offered?

General

Did the multi-use concept work? What were the advantages of multi-use? What were the limitations/disadvantages of multi-use?
Did the lab concept work? What were the advantages/disadvantages/limitations of the lab?

.....3

EVALUATION METHODOLOGY

DESIGN

The evaluation was designed to be both formative in that the data collected and opinions expressed were fed back to the program managers on a regular basis and s ummative in that the evaluation culminated in the present report that summarizes the data collected over the six-month (1983 January to June) evaluation period. In order to answer the research questions posed, two types of data were collected--descriptive data on the use of the microlabs and opinion data concerning the microlabs from the users.

DESCRIPTIVE DATA

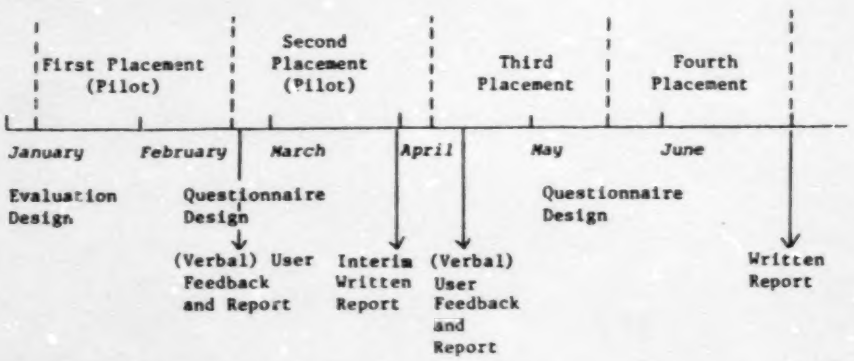
Data on the grades and numbers of students and teachers who used the microlabs between 9 and 3 were obtained from the Principals. The numbers of staff and night school students who were involved in the 3-6 inservice and the 7-10 night school, respectively, were obtained from the program. managers.

OPINION DATA

The opinions of the users of the microcomputer labs were solicited. In the first few months of the pilot study, the researcher obtained the users' feedback verbally and through questionnaires; for the final placements, questionnaires were the primary vehicle for surveying opinions. The following users were surveyed.

9-3 (School use)	- principal/teachers of host school
3-6 (Staff PD)	- workshop instructors/participants
7-10 (Night school)	- course instructors/students

TIME LINE - *1983*



REPORTING THE RESULTS

The opinions of the users of the microlabs are reported in three Appendices as follows:

APPENDIX A - School Use of the Microcomputer Labs

APPENDIX B - District Inservice Use of the Microcomputer Labs

APPENDIX C - Career and Community Education Services Use of the Microcomputer Labs

This opinion data and the description data have been organized in the next section of the report to respond to the research questions posed.

SUMMARY OF THE RESULTS

SCHOOL USE (9-3)

The data summarized here were collected by means of verbal feedback from the staff users of the microlab in the first four pilot schools and by means of detailed surveys completed by the staff of the final four schools. A full report of the responses is provided in Appendix A; this section summarizes the results in order to respond to the research questions posed.

How were the labs used? By whom? For how long? Doing what?

The two microlabs were placed in eight elementary schools for a period of five weeks each from 1983 January to June. Approximately 2,780 students and 120 teachers were exposed to the microlabs during that time. All of the students in six of the eight schools and all but the Kindergarten students in the remaining two schools experienced the microlab. The 53 teacher respondents from the four final schools utilized the VSB curriculum units as follows:

Primary Awareness (32 teachers)
Intermediate Awareness (24)
Intermediate Mathematics (19)
Intermediate Social Studies (12)
Intermediate Science (11)
Word Processing (1)
Other (10)

It is apparent that a number of intermediate teachers utilized more than one curriculum package.

Most of the administrators and teachers had had none or very little previous experience with microcomputers and only a few of the students

.....5

had had any previous computer experience. Teachers received an introductory inservice session which was rated as satisfactory by the principals and the majority of the teachers; many suggestions were made for improving the inservice. Principals reported that teacher preparation time varied with the teacher and grade level. Teachers spent on average four hours preparation time on the computers and two hours preparation time in other activities. Many teachers commented on their specific preparation activities and the activities in which they engaged to prepare their students.

Most of the schools had at least one teacher who was experienced with microcomputers to whom teachers could address any problems. Over half the teachers commented on how they had used the services of the "teacher expert" in their schools.

The problems experienced with the location and/or physical arrangement of the microlabs in the pilot schools were not, reportedly, experienced by the four final schools. Most of the teachers reported that they had not experienced difficulties with the location and/or physical arrangements of the labs. Problems with the hardware and software were experienced by most schools according to the principals. Approximately one-quarter of the teacher staff reported experiencing difficulties with the hardware/software.

The primary and intermediate awareness packages were the curriculum units most often used by the teachers. The teachers' guide for these two units were the most highly rated. The students' guide for the primary awareness was rated less highly than the intermediate awareness students' guide. Principals rated the curriculum as valuable or better and the teachers' ratings of most of the materials averaged around "good" (3) on a four-point scale from "poor" to "excellent". About one-quarter of the teachers made some suggestions for improving the materials.

What was the extent of contact of teachers with the labs?

In three of the four pilot schools, the individual teacher worked with his/her own class on the microcomputers. In the remaining pilot school, a "teacher expert" was available to take the class, team teach or act as a teacher aide until the classroom teacher was confident to take the class on his/her own. For the four final schools, the survey results indicated that the "teacher expert" took over the whole or part of a class for eight teachers and team taught with two teachers, and in three instances, the classroom teacher acted as an aide to the "teacher expert". It is apparent that for most other classes, the classroom teacher had direct contact with the lab.

What problems were experienced in dealing with the hardware and software?

As would be expected, the four pilot schools experienced considerably more frustration and problems with the hardware and software than the final four schools. Some of the problems experienced by the pilot schools were solved and techniques were developed by the teachers to overcome the unsolvable problems. These techniques and other suggestions were passed on from school to school as the microlabs moved.

.....6

The most notable difficulty that staff experienced with the hardware was as a result of the three microcomputers to one disk drive and printer set-up. Only one microcomputer at a time could access the disk drive to load programs or access the printer to output final copy, and if two computers attempted to access simultaneously the system went down. The teachers, very early on, developed techniques such as putting a bean bag on the microcomputer with priority in accessing, to lessen the possibility of two students accessing at the same time. Although techniques such as this were devised, the problem of accessing remained, resulting in frustration and lost teaching time. Techniques such as this were passed on to subsequent schools where, forewarned, teachers had less difficulty.

In the four final schools, when many of the initial problems with hardware and software had been solved, only about one-quarter of the staff indicated that they had experienced any difficulties with the hardware and/or software. The problem of broken down hardware was mentioned by about 10% of the teachers in that students received less individual time on the computers when the number of useable machines was reduced. Several teachers commented that repairs could have been made more promptly. Difficulties experienced with the software included faulty diskettes and frequent erasures of the diskettes; it was suggested that spares be provided. Several staff commented that the problems experienced were not very significant.

What was the impact on the students? What was the impact on the teachers?

For students and staff, the experience was successful. Nine-eight percent of the teachers surveyed and all four principals surveyed rated the experience for the students as successful or better and 96% of the teachers and all of the principals rated the experience for the staff as successful or better. Three principals rated the experience as very successful for the administrators and 100% of the teachers and all four principals rated the experience for the school generally as successful or better. All four principals and almost all teachers surveyed recommended having the microlab back in the school in the future.

The most obvious impact according to staff that having experienced the microlab had on the students was their heightened enthusiasm which was maintained throughout the placement of the lab and, reportedly, spilled over into other subject areas in the classroom. Their microlab lessons were enjoyable for the students and they experienced enhanced interest in computers and heightened awareness of computer technology. Teachers observed that the lab had an impact on all students. Specifically, ESL students were reported to have an opportunity to shine and "it was a thrill for students with learning problems".

Staff also experienced the impact of having the microlab in the school. Teachers reported that they felt more positive about computers, less apprehensive and more confident as a result of having worked with the microlab. Teachers, similar to the students, experienced enhanced interest and awareness as well as increased knowledge of computers. The enthusiasm sparked for some teachers a desire to learn more about computers and to utilize the school computer more. One teacher observed that after working with the microlab one could see the potential of the computer as an educational tool.

.....7

Fourteen staff respondents made some other comments; two examples are cited:

> "I feel the microlab is the only way to teach the computer to a class. One or two computers in a school is not very effective."
>
> "It's great to let them have the experience--seeds ideas for their future."

What happened when the labs left?

Principals and teachers were asked what their future plans were for working with computers. Three of the four principals indicated an intention to obtain (more) microcomputers for their schools. One planned to make more computer time available to students and one reported specific plans for the use of a microcomputer in the office and with students. More than half the teachers described some future plans for working with microcomputers with their students.

All four principals and almost all the teachers recommended having the microlabs in their schools again. Many made suggestions for improving the experience in the future.

STAFF PROFESSIONAL DEVELOPMENT (3-6)

The descriptive data summarized here were obtained from the program managers and instructors; the opinion data were collected by means of workshop evaluation forms from instructors and participants. A full report of the responses of the workshop instructors and participants is provided in Appendix B. The results are summarized in this section of the report to respond to the research questions posed.

How were the labs used? By whom? For how long? Doing what?

Three formal District inservice programs[1] were offered to Vancouver School Board staff. Two courses--Introduction to Microcomputers and Beginning Basic Programming--were offered by Program Services, each session lasting two hours per week for four weeks; and one--Word Processing--was offered by Audio-Visual Services, each session lasting three hours per week for three weeks. Introduction to Microcomputers was offered eight times with an approximate enrollment of 125 from 1983 January to June; Beginning Basic Programming and Word Processing were each offered six times enrolling approximately 87 participants and 90 participants, respectively. In total, approximately 300 staff participated in District inservice on the microlabs from 1983 January to June.

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1. In addition to the formal inservice offered, it was anticipated that the teachers in the schools where the microlabs were placed would utilize this time (3-6), when available, to prepare to teach the microcomputer curriculum (informal inservice).

.....8

Of the approximately 300 District inservice participants, 167 completed and returned workshop evaluation forms. The breakdown of respondents by position was as follows:

Elementary classroom teacher	57
Elementary special teacher	24
Secondary classroom teacher	22
Secondary special teacher	19
Other school staff (e.g. secretary, staff assistant)	18
Elementary administrator	12
District staff	9
Secondary administrator	6

It is apparent that, although teachers were the majority of the participants, staff from a wide range of roles participated in the District inservice offerings.

What were the inservice needs/expectations of the participants? Were these needs/expectations met by the inservice they received?

Other than the common need of the participants of all three courses to become familiar with and learn to operate the microcomputer, the expectations of the participants varied depending upon which of the three courses they were taking and even within the three courses their expectations varied. Among the 19 expectations identified by the participant respondents of the Introduction to Microcomputers workshop, to gain a basic understanding of microcomputers, to learn how to operate a microcomputer, to learn basic operations/commands/functions and to learn about the types of hardware/software available, were the most frequently mentioned expectations. The four most prevalent expectations amongst the 19 identified for Beginning Basic Programming were to learn the fundamentals of programming/basic programming skills, to learn how to prepare a short/simple program, to learn the use of BASIC and to learn to operate a microcomputer. Word processing respondents reported these five expectations most frequently of the 14 identified--to learn to use a word processor/Word Pro, to learn the basic skills/steps/functions, to do word processing, to become familiar with microcomputers and to learn the applications of word processing.

For 26% of the respondents to the question, the workshops exceeded their expectations and for 69% the workshops met their expectations. Only 6% of the respondents to this question reported that the workshops were a disappointment. Eighty percent of the respondents identified at least one thing that they had learned which was important to them; the learning experiences of the participants varied with the courses they were taking.

What impact did the inservice have on the staff?

Eighty-eight percent of the evaluation respondents to the question, indicated that the inservice was relevant to their position with the VSB. Twelve percent indicated that the inservice was not relevant but three-quarters of these respondents commented that they planned to use what they had learned, in the future, when a microcomputer was available to them. About one-third of the respondents described the positive impact that having had the inservice (would have) has had on their educational roles.

.....9

Over half the respondents described some future plans for using the knowledge they had acquired through the inservice. Some of their plans are summarized below:

- with students/in the classroom (31),
- to take more courses (16),
- to set up programs (12),
- to use as a clerical tool in the classroom (e.g., writing/ marking exams, recording marks) (12),
- for personal use (7), and
- to help other teachers (5).

Sixty-two percent of the evaluation respondents suggested other microcomputer inservice they would like to see offered. Some sample final comments of the respondents follows:

"I do feel much more confident and aware of the possibilities of the computer in the classroom!"

"I feel I am part of the 80's now."

"What can I say--I'M HOOKED!"

NIGHT SCHOOL (7-10)

The descriptive data summarized here were obtained from the program manager and instructors; the opinion data were collected by means of course evaluation forms from instructors and students. A full report of the responses of the course instructors and students is provided in Appendix C. The results are summarized in this section of the report to respond to the research questions posed.

How were the labs used? By whom? For how long? Doing what?

Career and Community Education Services utilized the microlabs four nights per week for three of a four part program on data processing and twice for the Saturday--Night School in One Day--program. (Only the night school courses were evaluated for the purposes of this report.) An introductory course to microcomputers and two basic programming courses were offered at night school, each spanned ten sessions--twice per week for five weeks. The instructors reported a total of approximately 90 night school students from 1983 January to June. Of the approximately 90 night school students, 55 completed and returned course evaluation forms designed to evaluate the microlabs. The opinions of these students and the four night school instructors who completed evaluation forms follow.

Did the location, timing, physical arrangement, class size and equipment pose any problems for night school?

The location of the microlabs in elementary schools instead of secondary schools where night school is usually held, posed problems for two of the four instructors and only four of the 55 student survey respondents. The two instructors commented on the lack of copying facilities in the elementary schools and two of the students commented that the chairs and tables were too small.

.....10

One instructor taught one night per week and the other three taught twice per week. Only one instructor found the timing (twice/week) to be a problem--in that it did not allow enough time for homework. Eleven of the 45 student respondents who attended night school twice per week found this posed a problem; some of their comments included a lack of time to study between classes (3), an overabundance of information to absorb in five weeks (3) and difficulty in managing two nights per week (2).

The physical arrangement of the microlabs posed a problem for only one of the four instructors who commented that there was not enough room to get around. Three students commented on the crowded classroom and lack of space between the terminals. Three of the four instructors found the class size (2 students/terminal) to be appropriate. Twenty-eight (51%) of the students reported having sufficient time on the computers and 24 (44%) reported that they did not have sufficient time; 13 of the 24 indicated a willingness to pay more to have more individual access to the computers and five indicated that they were not willing to pay more.

All four instructors and eight of the 55 student respondents reported experiencing difficulty with the equipment. Most frequently mentioned of the problems was the lack of direct individual access to the disk drive and printer. Both instructors and students made suggestions in this area.

How satisfactory were the courses offered?

Three of the four instructors indicated that they felt the courses met the expectations of most of the students and three of the four instructors were "satisfied" or better with the courses. For 45 (82%) of the student respondents, the courses met their expectations and for seven (13%) the courses did not. The students gave their instructors an average rating of 4.14 and their courses an average rating of 3.84, on a scale of 1-5 from unacceptable to excellent.

The rating indicated some room for improvements in the courses, and all four instructors and half the students made some suggestions. The most frequent suggestions are listed:

- provide a textbook/manual/handbook (7 students, 2 instructors)
- supply handouts (4 students, 2 instructors),
- have a smaller class size (4 students), and
- provide longer/more hours (3 students).

Two sample final comments of the student respondents follow:

"My appetite has been stimulated--need more info."

"Despite all the constructive suggestions I have listed above, I am very glad that the VSB is offering evening computer courses, and I wholeheartedly support the VSB in its endeavour!"

.....11

GENERAL

Did the multi-use concept work? What were the advantages of multi-use? What were the limitations/disadvantages of multi-use?

From the feedback of administrators and teachers in the schools where the microlabs were placed, the instructors and participants of the District inservice and the night school instructors and students, it would appear that the multi-use concept was successful. Generally, the problems which arose as a result of the shared facilities and equipment were few and readily solved early in the microlabs' placements in the schools. The enthusiasm of the administrators and teachers of the placement schools for having the microlab return to the schools is indicative of the paucity of problems associated with having the shared use of the microlabs in the elementary schools.

The advantages of the multi-use concept appeared obvious. In the period from 1983 January to June, approximately 2,780 students and 120 teachers in placement schools were exposed to the microlabs, approximately 300 staff participated in three different District inservice workshops and approximately 90 night school students attended three different courses offered by Community and Career Education Services. According to the principals of the pilot placement schools, the 9-3 time for school use was fully booked and in most schools all students (K-7) were involved. Program Services utilized the microlabs two evenings (3-6) per week for four weeks for formal inservice and Audio Visual used the microlabs one evening a week for three weeks; other workshops (not evaluated) and groups were booked in the remaining time slots and teachers in the placement schools used some evenings (3-6) for initial inservice and preparation. Night school utilized the 7-10 time block four nights per week and offered Saturday--Night School in a Day--twice from 1983 January to June. It would appear that the microlabs were almost fully utilized by the multiple groups involved.

Only a few limitations/disadvantages of multiple-use were identified and the problems which arose were readily solved. For example, initial poor communications between the users were ameliorated by frequent communication between the staff responsible for booking in AV and the schools, problems of cleaning and tidying up were solved with improved communication between the school and other users, and control over software and general repair of hardware was maintained by the microlab log book. Perhaps most pressing amongst the problems experienced by the placement school staff was the lack of time available to utilize the microlabs outside of school hours (after 3) for teacher preparation and parental involvement. One of the night school instructors also indicated an unmet need to do some preparatory work on the microlabs. None of the disadvantages identified in the evaluation appeared to limit the effectiveness of the multi-use concept of the microlabs.

.....12

Did the lab concept work? What were the advantages/disadvantages/ limitations of the lab?

It would appear from the feedback received that the lab concept was successful, but it is not possible from this evaluation to determine the relative effectiveness of having the microcomputers in labs of 15 compared to singly, doubly, in groups of 30 or in other configurations. The only evidence obtained was the feedback from several teachers that having the microcomputers in labs of 15 for use with a class was much more effective than a single computer--

> "I feel the microlab is the only way to teach the computer to a class. One or two computers in a school is not very effective."

Having 15 computers in a group allowed the teacher to work with an entire class sharing one computer between two students or half a class one-on-one with a computer, as desired.

The actual physical arrangement of the lab posed some problems in that the arrangement of three microcomputers to one disk drive and printer caused all three user groups some frustration and loss of teaching time. Several shortcomings of the hardware and software were identified by the District inservice and night school instructors. No problems with the set up of the tables were demonstrated.

CONCLUSIONS

In conclusion, it was apparent from the descriptive and opinion data collected that the multiple use of the 30 microcomputers in two labs of 15 microcomputers each placed in elementary schools for five weeks from 1983 January to June was a resounding success. Approximately 2,780 elementary students and 120 elementary teachers in eight schools, 300 District inservice participants and 90 night school students were exposed to the microlabs. The host school teachers and administrators, the inservice instructors and participants and the night school instructors and students, all reported having a successful experience with the microlabs. The enthusiasm of those users who were in direct communication with or observed by the researcher was readily apparent. Teachers and administrators of the host schools expressed a desire to keep the microlabs and were anxious to know when the microlabs would return to their schools.

APPENDIX A

SCHOOL USE OF THE MICROCOMPUTER LABS

1. SUMMARY OF VERBAL FEEDBACK OF FOUR PILOT SCHOOLS

2. SUMMARY OF SURVEY FEEDBACK OF FINAL FOUR SCHOOLS

.....14

OVERVIEW INFORMATION

The microcomputer labs were placed in eight elementary schools over the period of 1983 January to June. During that time, approximately 2,780 elementary students and 120 elementary teachers were involved with the microlabs during school hours. Feedback from the first four pilot schools was obtained verbally in small discussion groups; feedback from the remaining four schools was obtained through surveys. The responses of the staff of the first two pilot schools were incorporated into an interim report[2] and the responses of the second two pilot schools were reported to the program managers informally. This present report briefly summarizes the verbal feedback of the four pilot schools and presents a summary of the survey results of the second four schools.

1. SUMMARY OF VERBAL FEEDBACK OF THE FOUR PILOT SCHOOLS

(a) FIRST TWO PILOT SCHOOLS

Most of the staff who were involved with the microcomputer labs in their first placement found the experience to be very successful. Considering the difficulties experienced by the pilot schools, the reactions of most of the teachers were very positive. The teachers reported experiencing both enjoyment and frustration (initially as a result of some of the difficulties of being a pilot school). Most felt that they were more positive and more knowledgeable about computers as a result of having the lab and teaching the curriculum. Some teachers reported that they intended to use the school's microcomputer now that they were more familiar with computers.

Almost all teachers indicated that it was a good experience for their students. The students were observed to have been very enthusiastic about the microcomputer. Most teachers felt that the students had experienced a heightened awareness of computers as a result of the microcomputer lab. ESL students had an opportunity to shine in an environment where English skills were not of primary importance. Teachers also reported that positive student interactions occurred, both in the class and during unscheduled times, when students worked and learned together.

Although the staff were for the most part very positive about the experience, much of the feedback from the pilot schools' staff involved a discussion of problems experienced and suggested improvements. Their comments were solicited for the purpose of improving the experience for the teachers and students in the second placement of the lab. Many of the problems experienced resulted from the hardware. Many of the suggestions made about the initial inservice, the preparation time, the manuals and guides and the instructional methods were incorporated into presentations to the teachers who received the microcomputer labs in the second placement.

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2. Hunter, Susanne M., THE STAFF INSERVICE USE OF THE MICROCOMPUTER LABS, SR062, 1983 March 18.

.....15

(b) SECOND TWO PILOT SCHOOLS

Again, most of the staff who were involved with the microlabs found the experience to be very successful. Generally, the teachers were positive about the experience and felt that they had learned a great deal. The teachers described the students' responses to the lab as enthusiastic and reported that the enthusiasm was maintained over the five weeks. It was mentioned in particular that "it was a thrill for students with learning problems". Again, as solicited, the staff made some suggestions regarding the initial inservice and preparation time, the hardware and the materials.

2. SUMMARY OF SURVEY FEEDBACK OF THE FINAL FOUR SCHOOLS

(a) PRINCIPALS' EVALUATION

Each of the principals of the four elementary schools completed an evaluation survey concerning the experience of having the microlab in their schools.

Previous Computer Experience

Three of the four principals reported having none or very little personal experience with microcomputers previous to the arrival of the microlab. One principal reported having attended two brief workshops. The principal of one school indicated that "none of the staff had previous microcomputer experience" and the principals of the remaining three schools indicated that "some of the staff had previous microcomputer experience". For two schools only, the principals indicated that there were "one or more staff members in the school that were experienced with microcomputers to whom teachers could address any problems". In one school the "Special Needs Teacher accompanied as many classes as possible [and the] Senior Teacher took on [the] organizational requirements [and] responsibility for problems". In the other school, "concerns or questions by other staff members were directed to them".

Introductory Inservice/Teacher Preparation

All four principals rated the introductory inservice session as "satisfactory" (a "3" on the four-point scale). The principals suggested that more "hands-on" time and more lead time were needed, that during the inservice session more time should be spent familiarizing staff with the contents of the diskettes and that more introductory inservice was needed. Two schools reported that their staff had some other inservice on microcomputers previous to the labs' arrival; other inservice included VSB district inservice, private courses, a session for all staff to go over individual problems and a visit to a microcomputer centre. All four principals indicated that the teachers' preparation for teaching the microcomputer curriculum took "some time but not too much". One principal commented that the amount of time spent on teacher preparation "depended on the individual - Senior Intermediate [teachers] found it hard to keep ahead of students".

.....16

Location/Physical Arrangements/Equipment

Neither the location nor the physical arrangement of the microlabs posed any problems for the four schools. Three principals reported experiencing difficulties with both the hardware and the software. One principal commented on a defective disk drive which was out for repair for most of the time and software that was, in the beginning, being constantly erased and needed to be reproduced. The other two principals did not specify their problems.

Curriculum

Two principals rated the curriculum as "very valuable" and two rated it as "valuable" ("4" and "3" respectively on a four-point scale). None made any other comments.

Success of the Experience

The principals were asked to rate the success of having the microlab for themselves, for the students, for the other staff and for the school generally, on a four-point scale from Very Successful (4) to Very Unsuccessful (1). Three principals rated the experience for themselves as administrators as "very successful" and one rated it as "successful". Their comments include:

- it opened up a whole new area of education.
- was an excellent way of personally becoming familiar with awareness material--also great PR with parents.
- determined to begin a microcomputer program.
- enhanced my interest.

All four principals rated the experience of having the microlab for the students as "very successful". The principals commented:

- became more aware and interested in computer technology,
- great enthusiasm.
- students most enthusiastic--required extra staff supervision every morning and noon.
- stimulated the students greatly in microcomputer use.

Three principals rated the experience as "very successful" and one as "successful" for the staff. The principals commented that

- it enhanced their interest and awareness.
- created considerable enthusiasm.
- the staff became quite familiar with materials--found it exhausting as a lot had to be done in a short time frame.
- it took away initial apprehension.

All four principals rated the experience as "very successful" for the school generally. Two commented:

- a "shot in the arm" at this time of year.
- a major impact--all participated (K-7).

.....17

All four principals indicated that they would recommend having the microlab in their school again. To improve the school's experience with the microlab, the principals suggested--

- longer time period (2),
- include program development in the activities,
- more prior staff inservice,
- a choice of time when lab is to arrive, and
- more opportunity for parents to get "hands-on" experience.

The four principals described their future plans for microcomputers in the school. Two indicated an intention to purchase some microcomputers in the future. One principal mentioned the plan to obtain more computers and make more computer time available for students. The fourth principal reported two planned uses:

1) Office - Monitoring math and language arts program and
2) Students - Generally "enrichment" activities.

Other Comments

One principal made the following other comment:

"I am grateful to the VSB for considering our school for the lab."

(b) STAFF EVALUATION

Fifty-three staff members from four elementary schools completed and returned an evaluation form. Forty-seven of the staff respondents were classroom teachers representing approximately 1,140 students at all elementary grade levels.

Previous Computer Experiences

Twenty of the 53 staff respondents indicated that they had no, minimal or very little previous computer experience and 28 reported only the experience of the introductory inservice session. Three reported having attended VSB District inservice sessions and three commented on having taken computer courses at university. Four had had experience with computers in another job or at another school. The remaining five respondents reported some "other" previous computer experience.

Thirty-one of the 53 staff respondents indicated that their students had had no previous computer experience. Eighteen respondents observed that a few of their students had had some experience but that the rest had had none as follows:

- few have home computers (9),
- few have had lots of experience (4),
- few have had a little experience (4),
- few have had experience playing games (3), and
- few have had some experience (3).

.....18

Four teachers made some "other" comments regarding their students' previous computer experience.

Only 17 of the 53 staff respondents indicated that they had a computer in the school already. Of the 17 teachers, only six reported using the computer themselves and only five indicated that "some" or "most" of their students had used the computer.

Introductory Inservice/Teacher Preparation/Student Preparation

The staff respondents rated the introductory inservice session(s) provided by the VSB as follows:

Very satisfactory (7)	Unsatisfactory (6)
Satisfactory (29)	Very unsatisfactory (6)
No response (5)	

The majority rated the inservice as satisfactory or better but about one-fifth found the inservice to be unsatisfactory. The following improvements were suggested by 41 of the 53 respondents:

- more time/longer sessions (12),
- more sessions (11),
- more practice/"hands-on" experience (7),
- more practical inservice/need to go through programs/diskettes that will be used (5),
- point out pitfalls/problems (3),
- more individualized instruction/smaller group (3),
- more indepth/detail (3), and
- other suggestions (11).

Five staff respondents indicated that they had received other formal inservice before teaching the computer curriculum.

Thirty-four staff respondents reported that there were other staff members in the school who were familiar with microcomputers from whom they could request assistance with problems. Twenty-nine respondents commented on how they utilized the services of these "teacher experts" as follows:

- "teacher expert" took over the whole/part of the class (8),
- "teacher expert" assisted/was available to give assistance (6),
- "teacher expert" gave assistance/answered questions when needed/when problems arose (6),
- the teacher acted as an aide to the "teacher expert" (3),
- team teaching (2),
- "teacher expert" answered questions/gave advice (2), and
- other services (8).

Teachers were asked how many hours of preparation they spent on the microcomputer and how many other hours they spent in preparation. Thirty-eight staff respondents reported working between zero and 16 hours on the microcomputers with an average preparation time of 3.9 hours and 32

.....19

reported working between zero and eight hours on other activities with an average of 2.1 preparation hours. In total, the staff respondents indicated an average of 6.0 hours spent in preparation for teaching with the microcomputer lab. Forty-six respondents commented on what they did to prepare themselves for teaching the microcomputer units; the following summarizes their comments:

- read manuals/guides/materials (21),
- practised on the computer (13),
- previewed units/diskettes/program (10),
- attended inservice (8),
- detailed lessons (3),
- prepared materials for class (2), and
- other preparations (14).

Forty-six staff respondents reported on the preparation they did with their students before they used the microlab. Their comments can be summarized as follows:

- taught the students the keyboard (26),
- taught basic vocabulary/terms (13),
- introduced components/parts of the computer (11),
- taught main commands/procedures/sequencing (9),
- talked about computers generally (5),
- went through student guide (4),
- discussed safety/careful use of computer (4),
- had preinstruction/practised (3),
- none (3), and
- other preparations (9).

Location/Physical Arrangements/Equipment

Only four of the 53 staff respondents indicated that the location of the microlab posed problems for them. Three commented that it was a problem for the LAC to be closed for six weeks and two teachers (from an annex) indicated that they had to walk to the main school to use the microlab. Seven teachers indicated that the physical arrangement of the lab posed problems. Three teachers commented that they had to split their classes because there were too few computers, and two commented that more room was needed to move around (wider aisles).

Fourteen respondents indicated that they had experienced difficulty with the hardware and 16 with the software. Seven teachers reported that some of the hardware was broken down for a good deal of the time and two suggested that repairs could be done more promptly. Two respondents suggested that having a disk drive for each computer would improve the problems experienced with the hardware. Two teachers reported faulty diskettes and suggested that spares be provided and two reported difficulties with the diskettes often being erased.

.....20

Curriculum Evaluation

The number of teachers who studied each of the curriculum units with their students was as follows:

Primary Awareness (32)
Intermediate Awareness (24)
Intermediate Mathematics (19)
Intermediate Social Studies (12)
Intermediate Science (11)
Word Processing (1)
Other (10)
- programming (3)
- VSB diskettes (2)
- language arts (2)
- other (3)

Forty-six teachers reported the approximate length of the sessions they had with their students on the microlab. The session length ranged from 30 to 90 minutes with an average length of time of 42.5 minutes.

Table AI presents the number of respondents who indicated that they used each of the teachers' manual and students' guide for each of the curriculum units and their average ratings of the value of the materials used based on the following scale:

POOR	FAIR	GOOD	EXCELLENT
1	2	3	4

TABLE AI

AVERAGE RATING OF THE VALUE OF THE CURRICULUM MATERIALS USED

Curriculum Units	*Teachers' Manual*		*Students' Guide*	
	Number Who Used	Average Rating	Number Who Used	Average Rating
Primary Awareness	34	3.1	19	2.2
Intermediate Awareness	25	2.8	18	2.7
Intermediate Mathematics	19	2.5	12	2.7
Intermediate Social Studies	15	2.5	10	2.3
Intermediate Science	9	*	7	*
Word Processing	4	*	1	*

*The Intermediate Science and Word Processing units were used by too few teachers to obtain an accurate rating of the value of each.

.....21

The primary and intermediate awareness materials were used more frequently than the materials from other units. For each unit, the teachers' manual was used more frequently than the students' guide. The average ratings of most of the materials were in the range around "good" on the scale. The Primary Awareness and Intermediate Social Studies students' guides were rated slightly less favourably. Seventeen respondents suggested some changes to the teachers' manuals; their suggestions can be summarized as follows:

- simplified/shortened (6),
- more teaching strategies (3),
- section on error correction/how to get out of program/ what to do when things go wrong (3),
- correct errors in manual/have corrections page (3),
- other suggestions (3).

Twelve respondents made some suggestions for improving the students' guides. Three respondents suggested that the guides be simplified and the remaining comments were made by one respondent only.

General Evaluation of the Experience

Table AII provides an indication of the ratings made by the staff respondents of the success of the experience of having the microlab.

TABLE AII

SUCCESS OF THE EXPERIENCE

Success of Experience	Very Successful		Successful		Unsuccessful		Very Unsuccessful	
	#	%	#	%	#	%	#	%
for teacher (n=50)	23	46	25	50	2	4	0	0
for the students (n=52)	30	58	21	40	1	2	0	0
for the other staff (n=40)	17	42	22	55	1	2	0	0
for the school generally (n=43)	24	56	19	44	0	0	0	0

Almost all of the staff respondents rated the experience as "successful" or "very successful" for themselves, their students, the other staff and the school generally. The experiences of the students and the school generally were rated more highly than the experience of the individual teacher or the other teachers. Forty-nine of the 52 teachers described the impact that having experienced the microlab had had on them --

- enhanced interest/very interested in computers (17),
- developed desire to learn more/for more experience (8),

.....22

- more knowledgeable (6),
- very positive impact/good experience (6),
- can now see potential of computer as educational tool (6),
- more confident/less frightened by computer (5),
- good beginning/first real experience (4),
- enjoyed it/fantastic (3),
- created desire to use computer more (3), and
- other impact (13);

and on their students --

- enhanced interest/very interested (13),
- highly motivated/keen/eager/enthusiastic (10),
- very positive impact/good experience (7),
- enjoyed the experience (7),
- had impact on all children (5),
- increased knowledge, e.g. in math (4),
- more aware of computers (3),
- more familiar with computers (3),
- still seen as a toy/another form of entertainment (2), and
- other impact (21).

Fifty-one of the 52 staff respondents recommended having the microlab in their schools again. Twenty-six made suggestions for improving their school's experience another time. Their suggestions can be summarized as follows:

- allow more time for teacher preparation (7),
- allow students more time on lab/have lab for longer period of time (6),
- give more staff inservice (3),
- have fewer students working on microlab at a time (3),
- have more computers/terminals (2),
- place microlab in unused room (2),
- have microlab in school at a different time of year (2), and
- other suggestions (8).

Future Plans for Working with Microcomputers

Thirty-one of the 52 teacher respondents described some future plans that they have for working with microcomputers personally, ten indicated that they had no plans or were unsure of their plans and 12 did not respond. The following summarizes the personal future plans of the 31 respondents:

- take courses (19),
- want to learn more (4),
- (possible) home purchase/helping own children (4),
- increase knowledge of programming (2),
- other plans (6).

.....23

Eighteen of the 52 staff respondents described some future plans for working with microcomputers with their students, 11 indicated that they had no plans (as yet), eight commented that there was no computer available (as yet) and 18 did not respond. The following describes some of the future plans of teachers for student use of microcomputers:

- work with school computer/get one on loan (5),
- encourage them to take courses (2),
- go on to more advanced ideas/enlarge on present knowledge (2),
- develop programs for student use (2),
- obtain/work on materials at student level (2), and
- other plans (7).

Other Comments

Fourteen staff respondents made some other comments; several examples are cited:

"I feel the microlab is the only way to teach the computer to a class. One or two computers in a school is not very effective."

"A very enjoyable experience!"

"It's great to let them have the experience--seeds ideas for their future."

"The labs are wonderful!! Please purchase more labs so that schools can have their turns more frequently. Annual exposure at each school should be a priority."

.....24

APPENDIX B

DISTRICT INSERVICE USE OF THE MICROCOMPUTER LABS

1. INTRODUCTION TO MICROCOMPUTERS
2. BEGINNING BASIC PROGRAMMING
3. WORD PROCESSING

.....25

1. INTRODUCTION TO MICROCOMPUTERS

(a) INSTRUCTORS' EVALUATION

The two instructors of the "Introduction to Microcomputers" inservice completed eight evaluation forms and reported a total enrollment of 125 students in the eight workshops. In all eight instances, the instructors indicated that the physical arrangement of the microcomputer lab was satisfactory and the class size was appropriate for the lab. For one of the eight workshops, the instructor experienced a problem with having the inservice in an elementary school. A "cueing system" was suggested for improving the classroom environment.

For seven of the eight workshops, the instructors indicated that both the hardware and the software performed satisfactorily. Some problems were experienced as a result of the three units per disk drive and a spelling error was reported in the software. No suggestions were made for improving on the hardware or software.

For six of the eight workshops, the previous computer experiences of the participants did not vary greatly. In the two instances where the backgrounds did vary, typing skills and level of content expected were cited as problems. In six of the eight instances most of the participants had no previous microcomputer experience; in the other two instances they had "very little" previous experience. From the point of view of the instructors, the participants' reasons for attending this inservice included:

- for general interest,
- to get over fear of computers,
- to become familiar with hardware,
- to become familiar with software,
- because computers are coming,
- can use computers in positions, and
- getting lab.

In all eight instances, the instructors indicated that the inservice had met the expectations of most of the participants.

For all eight workshops, the two instructors of the "Introduction to Microcomputers" inservice were satisfied or better with the course. Suggestions for improvement made by the instructors included revision of some materials, better coordination, increase of course to five sessions and follow-up of this course with next higher level course.

(b) PARTICIPANTS' EVALUATION

Position

Sixty-one participants completed an evaluation form for the "Introduction to Microcomputers" workshops. A breakdown of the respondents by position is presented in Table BI.

.....26

TABLE BI

POSITIONS OF THE INTRODUCTION TO MICROCOMPUTERS WORKSHOPS RESPONDENTS

POSITION	NUMBER
Elementary classroom teacher	33
Elementary special teacher	8
Secondary classroom teacher	5
Secondary special teacher	5
Elementary administrator	4
Secondary administrator	4
Other school staff	1
Other	1

The participants in the "Introduction to Microcomputers" workshops held a variety of positions. Elementary classroom teachers were the most strongly represented group amongst the evaluation respondents.

Expectations of the Inservice

All but three of the 61 "Introduction to Microcomputers" respondents reported what they expected to learn in the inservice. Their comments are summarized below:

- how to use/operate a microcomputer (33),
- general ideas/basic understanding of microcomputers (12),
- basic operations/commands/functions/techniques (9),
- types of hardware/software available (8),
- ease/familiarity/comfort with microcomputers (4),
- how to load/save a disk/program (3),
- classroom applications (3),
- practice at using programs/to work through programs (3),
- how to program (2),
- how to use a program/software (2),
- how to use the keyboard (2),
- the capabilities/applications of microcomputers (2), and
- other expectations (6).

For 43 of 61 respondents, the inservice met their expectations and for 14, the inservice exceeded their expectations. One did not respond and three indicated that the inservice was a dissappointment to them. Twenty-two respondents gave reasons for why the inservice met or did not meet their expectations; four made negative comments and 18 commented positively as follows:

.....27

- learned the basics/learned how to use a computer (5),
- well developed/well presented/thorough lessons (5),
- learned a lot/more than anticipated/as much as is possible (3),
- patient instructor (3),
- good instructor/tremendous effort by instructor (3),
- more than enough content/more information covered than expected (3),
- good handouts (3),
- covered what was expected (3),
- good introduction/gave overview (2),
- more interesting than expected/really enjoyed course (2),
- dispelled my fear of the computer/more at ease (2),
- lots of "hands-on" experience/lots of practice (2),
- can now begin handling/using microcomputer (2), and
- other positive reasons (10).

Learning Experiences

The respondents were asked to comment on the three most important things that they learned in the inservice. Forty-eight of the 61 respondents reported at least one thing that they learned that was important to them. A summary of the important learning experiences of the "Introduction to Microcomputers" respondents involves:

- vocabulary/terminology/language (12),
- what programs/hardware are available (12),
- how to use a computer/how a computer works (11),
- how to load a program (11),
- how to call up a program/the directory (10),
- how to use a diskette/diskette preparation (9),
- basic functions/mechanics/procedures of a computer (7),
- how to use programs/software (7),
- became familiar with keyboard (5),
- how to apply computers in the classroom (4),
- ease/confidence with the machine (4),
- how to choose/evaluate a program/software (3),
- complexity of microcomputers (3),
- cursor control/how to delete on screen (3),
- uses/value of a computer (3),
- how to save a program (2),
- familiarity with/general knowledge of computers (2), and
- other learning experiences (21).

Relevance and Impact of Inservice

Forty-eight of the 61 "Introduction to Microcomputers" respondents indicated that the inservice was relevant to their positions with the VSB. Eight indicated that the inservice was not relevant and five did not respond. Of the eight respondents who indicated that the inservice was not relevant, two reported that they had no computer available to them, two commented that it was not relevant at this moment, one expected to use the information in the future and one expected that the school would have a computer soon. The following summarizes the reasons given by 37 respondents for why the inservice was relevant to their positions at the VSB:

.....28

- use/can use microcomputer in teaching/with students (14),
- have microcomputer in school/in our area (6),
- going to have computer(s) in school soon (6),
- hope to/will use it in future (3),
- can use computer as administrative tool (2), and
- other reasons (7).

Twenty respondents described the impact that having had the inservice would have on their educational roles. Their comments included:

- involved in proposing purchase of school computer (3),
- aware of the need for more training (3),
- using information learned with students (3),
- more knowledgeable about computer (2),
- can now operate school computer (2),
- aware of computer's potential for teaching (2), and
- other areas of impact (8).

Plans for Using New Knowledge

Thirty "Introduction to Microcomputers" respondents described some future plans for using their new knowledge of microcomputers as follows:

- to use with students/in the classroom (11),
- to take more courses/instruction/seminars (7),
- to use with microlab (3),
- to use to set up programs related to subjects being taught (3),
- to use to help other teachers use computers (2),
- to record marks/compute and file marks (2),
- to help implement school program (2),
- for personal use (2),
- to become familiar with/practise with school computer (2), and
- other plans (4).

Suggestions for Improving Inservice and for Future Inservice

Forty-seven of the 61 "Introduction to Microcomputers" respondents made some suggestions for improving the inservice. Their suggestions have been summarized as follows:

- more practice time/more "hands-on" experience (20),
- less time needed/speed it up a bit (3),
- more time needed/move at slower rate (3),
- more sessions/longer program of instruction (3),
- allow participants to work at own speed (2),
- give more individual help (2),
- schedule workshops closer together in time (2),
- make more computers available for practise (2), and
- other suggestions (12).

.....29

Thirty-seven respondents suggested other microcomputer inservice that they would like to see offered to staff. The following summarizes their suggestions:

- programming (9),
- more of the same introductory courses (5),
- more advanced courses (3),
- inservice in the home school (3), and
- other suggestions (7).

Other Comments

Twenty-two "Introduction to Microcomputers" respondents made some other comments which include:

- course was enjoyable (7),
- opportunity appreciated/thank you (5),
- excellent/enthusiastic instructor (4),
- good/excellent sessions (3), and
- other comments (5).

The following are several sample comments:

"I do feel much more confident and aware of the possibilities of the computer in the classroom!"

"Great course. Keep up the good work!"

"[Instructor's name] ... your enthusiasm rubs off! Great interest aroused!"

2. BEGINNING BASIC PROGRAMMING

(a) INSTRUCTORS' EVALUATION

The two instructors of the "Beginning Basic Programming" inservice completed six evaluation forms and reported a total enrollment of 87 students in the six workshops. In all six instances, having the inservice in an elementary school did not pose any problems and the class size was appropriate for the lab. For four of the six workshops, the physical arrangements were satisfactory; in one school, the arrangement of the desks posed problems for discussion. The need for an overhead projector was mentioned twice.

For all of the six workshops evaluated by the two instructors, the software performed satisfactorily and for three of the six the hardware performed satisfactorily. In three instances, the instructor(s) experienced difficulties as a result of the three unit per disk drive set up, they had difficulties with a defective disk drive in two instances, one experienced "erratic machine behaviour" and one found the "use of lower case too restrictive". The instructors of the six workshops suggested some improvements to the hardware and software:

.....30

- use a controller on each set of three microcomputers,
- use better quality disks,
- use different hardware, and
- have a disk drive for each or use a MUPPET.

In five of the six workshops the computer experiences of the participants did not vary greatly. This posed a problem in one workshop only when the participants had had exposure to different hardware. Most of the participants of all six workshops had "very little" previous experience with microcomputers. From the point of view of the two instructors, the participants' reasons for attending this inservice involved:

- to find out about computers,
- for general interest,
- to get over fear of the computer,
- to learn to apply computers in class,
- to become computer literate,
- to learn some programming,
- to learn how to use the computer,
- to keep up with "hi-tech", and
- because computers are coming.

For all six workshops, the instructors reported that the expectations of most of the participants were met.

In five of six instances, the two instructors of the "Beginning Basic Programming" inservice were satisfied or better with the inservice. In two instances, the instructor suggested increasing the inservice to five sessions. Revision of materials, lengthening the inservice and following it up with the next higher level course were also suggestions.

(b) PARTICIPANTS' EVALUATION

Position

Fifty-five participants completed an evaluation form for the "Beginning Basic Programming" workshops. A breakdown of the respondents by position is presented in Table BII.

TABLE BII

POSITIONS OF THE BEGINNING BASIC PROGRAMMING WORKSHOPS PARTICIPANTS

POSITION	NUMBER
Elementary classroom teacher	19
Elementary special teacher	10
Secondary special teacher	7
Secondary classroom teacher	6
Elementary administrator	4
District staff	4
Other school staff	3
Secondary administrator	2

.....31

The participants in the "Beginning Basic Programming" workshops held a variety of positions. Elementary classroom teachers attended the workshops and responded to the evaluation in the greatest number.

Expectations of the Inservice

All of the "Beginning Basic Programming" respondents commented on what they expected to learn in the inservice. Their comments are summarized below:

- fundamentals of programming/basic programming skills (22),
- how to prepare a short/simple program (21),
- use of BASIC (9),
- how to operate a microcomputer (6),
- how to apply programming to the classroom (5),
- computer terminology/language (5),
- a few commands/basic program statements (4),
- general knowledge of computers (4),
- no expectations (2),
- more experience with/greater competency in computers (2),
- how to improve programs/solve simple problems in constructing programs (2), and
- other expectations (8).

For 32 of the 55 respondents, the inservice met their expectations and for 15, the inservice exceeded their expectations. Three did not respond and five indicated that the inservice was a disappointment to them. Five respondents commented that there was not enough practice time, four felt the program was too rushed/offered too much knowledge too quickly, and six respondents gave some other negative reasons. Thirty-two respondents gave positive reasons as follows:

- well developed/well presented lectures (10),
- was what I wanted/expected (8),
- learned a lot/more than I expected (6),
- learned basics (5),
- good instructor (4),
- can now do programming/more sophisticated programs (3),
- got plenty of "hands-on" experience (2), and
- other positive reasons (12).

Learning Experiences

The respondents were asked to comment on the three most important things that they learned in the inservice. Forty-three of the 55 respondents reported at least one thing that they learned that was important to them. A summary of the important learning experiences of the "Beginning Basic Programming" respondents includes:

.....32

- programming/how to program/basics of programming (15),
- machine language/basic programming language/terminology (15),
- how to write a simple program (13),
- basic commands/key words/functions (8),
- operations of microcomputers/disk drive/diskette/printer (7),
- specifics of programming, e.g., variables, conditionals, branching (6),
- uses of the computer/programming in the classroom (5),
- how much I don't know/how difficult it is (4),
- modular approach to programming (4),
- increased comfort/confidence with a computer (3),
- more time/help is needed to learn to program (3),
- a chance to work on the computer (2),
- how to use the keys/familiarity with the keyboard (2),
- use of the timer (2),
- how to get out of difficulty/correct errors (2), and
- other learning experiences (12).

Relevance and Impact of Inservice

Forty-seven of the 55 "Beginning Basic Programming" respondents indicated that the inservice was relevant to their positions at the VSB. Three indicated that the inservice was not relevant and five did not respond. Two of the respondents who indicated no relevance or did not respond hoped to use what they had learned in the future, one reported there was no computer available to him/her and one made another comment. The following summarizes the reasons given by 37 respondents for why the inservice was relevant to their positions at the VSB:

- use/can use microcomputer/programming with my students/in my teaching (15),
- have a microcomputer in our school/in our area (8),
- hope to/will use it in future (5),
- important for teachers to have an understanding of computer applications (4),
- going to have computer(s) in school soon (3),
- evaluating hardware/software at present (2), and
- other reasons (3).

Sixteen respondents described the impact that having had the inservice would have on their educational roles. Their comments included:

- more knowledgeable about computers/programming (8),
- can operate school computer (2),
- aware of the need for more training (2), and
- other areas of impact (5).

Plans for Using New Knowledge

Thirty-one "Beginning Basic Programming" respondents described some future plans for using their new knowledge of microcomputers and programming as follows:

.....33

- to take more courses/instruction (9),
- to set up programs (9),
- to use with students/in the classroom (7),
- to help other teachers to use the computer (3),
- for personal use (2), and
- other plans (4).

Suggestions for Improving Inservice and for Future Inservice

Forty-five of the 55 "Beginning Basic Programming" respondents made some suggestions for improving the inservice. Their suggestions have been summarized as follows:

- more time/more sessions/extend course time (18),
- more time to practise (13),
- more frequent sessions/more compact period of time (4),
- more handouts (from overheads) (4),
- have prerequisite experience on microcomputers (4),
- cover less material in each session (2), and
- other suggestions (11).

Thirty-five respondents suggested other microcomputer inservice that they would like to see offered to staff. The following summarizes their suggestions:

- more advanced programming/follow-up (16),
- more of the same level of programming (7),
- word processing (5),
- flow charting (3),
- programming for specific subject areas/grades (3),
- program of instruction for students (2), and
- other suggestions (11).

Other Comments

Twenty-eight "Beginning Basic Programming" respondents made some other comments including:

- good sessions/excellent workshops (7),
- excellent/enthusiastic instructor (7),
- opportunity appreciated/thank you (6),
- helpful/patient instructor (5),
- course was enjoyable (3),
- well organized/presented workshop (3), and
- other comments (5).

The following are several sample comments:

"I feel I'm part of the 80's now."
"Enjoyed the course and dedicated instructor."
"I think the inservices and microlabs are an excellent idea--
and hope to see more."

.....34

3. WORD PROCESSING

(a) INSTRUCTOR EVALUATION

The instructor of the word processing workshop completed an evaluation form. He did not find that having the inservice in an elementary school posed any difficulties and he reported that the physical arrangements of the lab and the class size were appropriate. He did not experience any difficulties with the hardware but did have some problems with the software. He suggested that the microcomputer desks not be wired in series because this caused occasional problems when one group of machines was powered down and that the appropriate hardware or software be added to restrict access to the disk drive and printer to one user at a time.

The instructor indicated that the previous computer experiences of the participants varied greatly. Most of the participants, according to the instructor, had some previous experience. He commented that better keyboard skills for some participants would have helped them to gain more from the course. The instructor reported that, to his knowledge, the inservice met the expectations of most of the participants and he, himself, was "very satisfied" with the course. He suggested that the participants have some prerequisite keyboard skills, and that the participants be provided access time to enable practice between classes. The instructor reported that he had had very good support from Audio Visual Services with preparing course materials.

(b) PARTICIPANTS' EVALUATION

Position

Fifty-one "Word Processing" inservice participants completed evaluation forms. A breakdown of the respondents by position is given in Table BIII.

TABLE BIII

POSITIONS OF WORD PROCESSING WORKSHOPS RESPONDENTS

POSITION	NUMBER
Secondary classroom teacher	11
Secretary	9
Secondary special teacher	7
Elementary special teacher	6
Elementary classroom teacher	5
Elementary administrator	4
District staff	4
Other school staff	3
Staff assistant	2

.....35

The "Word Processing" workshop participants held a variety of positions. Secondary school classroom and special teachers as well as secretaries participated in the word processing inservice and the evaluation in the greatest numbers.

Expectations of the Inservice

All "Word Processing" respondents reported what they expected to learn in the inservice. Their comments are summarized below:

- how to use a word processor/Word Pro (20),
- basic skills/steps/fundamentals/functions/commands (10),
- word processing (7),
- familiarization with microcomputers (6),
- applications of a word processor/what a word processor can do (6),
- how a word processor works/what word processing is all about (4),
- how to use word processing to perform writing tasks, i.e., editing (2),
- an overview of Word Pro 4 Plus (2), and
- other expectations (6).

For 37 of the 51 respondents, the inservice met their expectations and for 13 respondents, the inservice exceeded their expectation. Only one respondent reported that the inservice was a disappointment. Two respondents commented that they needed more hours of training and experience to improve the inservice. Twenty-eight respondents reported on why the inservice met or exceeded their expectation; their reasons are summarized as follows:

- learned/covered what was expected/more than expected (11),
- instructors were well organized/helpful/patient (4),
- learned the basics/learned a lot (3),
- previous microcomputer workshop experience was poor (2),
- well presented/well organized (2), and
- other positive reasons (12).

Learning Experiences

Respondents were asked to comment on the three most important things that they learned in the inservice. Forty-four of the 51 respondents reported on at least one thing that they had learned that was important to them. A summary of the important learning experiences of the "Word Processing" respondents follows:

- applications of a word processor/how it can be used/what it will do (12),
- basic commands/skills/rules/terminology/procedures (11),
- specific procedures, i.e., inserting, editing, formating (9),
- familiarization with microcomputers/basics of microcomputer use (6),
- what a word processor is/how it works (5),
- basics of word processing/how to run a word processor (5),

.....36

- versatility/sophistication of a word processor (5),
- how hard word processing is/how much there is to learn/how much practice is needed (4),
- "computers are not too difficult"/"it is possible to do it" (4),
- about Word Pro 4 Plus (3),
- another use of microcomputers (2),
- how to use a word processor for writing (2),
- the time savings aspects of word processing (2), and
- other learning experiences (12).

Relevance and Impact of Inservice

Forty-two of the 51 respondents indicated that the inservice was relevant to their positions with the VSB. Seven indicated that the inservice was not relevant, one indicated both and one did not reply. Of the eight respondents who indicated that the inservice was not relevant, four commented that it was not relevant "at this point in time", four reported that there were no microcomputers available for their use and two hoped that this would change in the future. The following summarizes the reasons given by 38 respondents for why the inservice was relevant to their positions at the VSB:

- going to have computer(s) in school soon (7),
- can use it for teaching (6),
- can use it for language programs/composition course (6),
- hope to/will use it in the future (5),
- can use it for office work (3),
- can use it to prepare teaching materials/lessons (3),
- important for teachers to keep up with new technology (3),
- can use it in my writing (3),
- can use it to teach/encourage staff (2),
- have computer in school (2), and
- other reasons (5).

Twenty-three of the 51 respondents described the impact that having attended this inservice would have on their educational roles. Their comments are summarized:

- increased knowledge of microcomputers/word processors (6),
- laid a groundwork for future use (6),
- will try to get a micro/word processor in school/home (4),
- interest in attending more workshops/seminars (4),
- will use word processing in my teaching (2),
- increased interest/more positive attitude (2), and
- other areas of impact (3).

Plans for Using New Knowledge

Twenty-eight respondents described some future plans for using their new knowledge of word processing as follows:

.....37

- to use word processing as a teaching tool, e.g. constructing work sheets/exams (10),
- to teach word processing to students (8),
- to use word processing in English/composition class (5),
- to use word processing in office (4),
- to use word processing in my own writing/for personal use (3),
- to use word processing as an administrative tool (2), and
- other plans (4).

Suggestions for Improving Inservice and for Future Inservice

Thirty-six "Word Processing" respondents made some suggestions for improving the word processing inservice. Their suggestions have been summarized as follows:

- more practice time/more time for "hands-on" experience (10),
- more frequent (closer together in time) workshops (7),
- more (in number) sessions (7),
- supply prepared notes/printed materials/list of commands (earlier) (6),
- more instructional time/slower pace (3),
- shorten instructional time/faster pace (2),
- furnish lab with MUPPET to allow free access (2),
- have project to complete/problems to do (2), and
- other suggestions (14).

Thirty-two respondents suggested other microcomputer inservice that they would like to see offered to staff. The following summarizes the suggestions:

- programming (12),
- more advanced word processing/follow-up (8),
- more of the same/review (8),
- data-based management (2),
- courses on hardware/software (2),
- teaching methods for microcomputers/approaches for use in the classroom (2), and
- other suggestions (11).

Other Comments

Twenty-seven respondents made some other comments. Their comments can be summarized as follows:

- excellent instructor(s) (10),
- enjoyable experience/very interesting (9),
- opportunity appreciated/thank you (7),
- instructor was very patient/unruffled (5),
- excellent inservice/worthwhile session (4),
- instructor was helpful (3),
- instructor was well organized (3),
- it was very informative/useful (2), and
- other comments (4).

.....38

The following are several sample comments:

"The workshop instructor was knowledgeable, helpful and patient."

"Thank you. The three sessions were as enjoyable as any workshop I have recently taken."

"What can I say--I'M HOOKED!"

.....39

APPENDIX C

CAREER AND COMMUNITY EDUCATION SERVICES

USE OF THE MICROCOMPUTER LABS

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(a) INSTRUCTORS' EVALUATION

Four instructors completed and returned evaluation forms for the night school use of the microcomputer labs. The respondents included an instructor of the Introduction to Microcomputers course, an instructor of Microcomputing II and two instructors of Data Processing II representing a total of approximately 90 students.

Location, Timing, Physical Arrangements

Two of the four instructors indicated that having the course in an elementary school posed problems, one indicated that the physical arrangements of the microlab were unsatisfactory, and only one found the class size to be inappropriate for the lab. The lack of copying facilities was mentioned by two instructors, the crowded classroom facilities resulting in poor access to the microcomputers was pointed out as a problem by two instructors and the physical arrangement of the three computers to one disk drive and printer was identified as a problem by one instructor. One instructor taught one night per week and the other three taught two nights per week; only one found this to be a problem -- having the class twice per week did not allow enough time to assign homework. Three of the instructors suggested improvements:

- would be easier to cover material in six weeks,
- have an overhead projector and foil,
- have class one night per week for 10 weeks, and
- make reference manual available to class.

Equipment

All four instructors indicated that the hardware did not perform satisfactorily and one instructor indicated that the software did not perform satisfactorily. Concerning the hardware, the instructors mentioned a lack of familiarity with the Commodore, the three microcomputers to one disk drive and printer, the "cranky" disk drives, the labourous graphics, and the awkwardness of the printer as difficulties experienced with the hardware. The instructor who reported difficulties with the software suggested that better documentation of what is on each diskette would help. Three instructors suggested improvements to the equipment:

- add a controller to the disk drives and printer,
- one disk drive each; one printer between 4 or 5,
- need to improve communication between screen and printer,
- have one student per terminal, and
- allow time for instructor to become familiar with Commodore.

Course

Two of the four instructors indicated that the previous computer experiences of their students varied greatly. These two instructors commented that a few of their students had used computers at work but both indicated that the variation in experience did not pose a problem. Most of the students had no or very little previous experience with

.....41

computers. The following reasons were given by the instructors for why their students were taking the courses:

- introduction to machines/acquire an understanding of computers/ general knowledge (4),
- for upgrading at work/business application/possible job training (3),
- need help with home computer/home application (2), and
- learn to program (1).

Three of the four instructors indicated that they felt the courses met the expectations of most of the students. The one remaining instructor commented that some of the students expected to be able to write large and complicated programs as a result of the course. Three of the four instructors were "satisfied" or better with the courses and all four suggested improvements to the courses:

- supply a textbook (2),
- supply handouts (2),
- give assignments/graphics (1),
- have more communication between instructors and coordinator (1),
- have some access to lab for instruction (1),
- present next course in the series (1), and
- offer more courses (for children and parents) (1).

(b) STUDENTS' EVALUATION

Fifty-five night school students completed a survey designed specifically to evaluate night school courses on the microlab and 16 students completed the general Career and Community Education Services evaluation form; the responses of these two groups are, by necessity, reported separately.

i. GENERAL EVALUATION

Sixteen night school students completed the general Career and Community Education Services evaluation form concerning the courses they attended on the microlab. Eight of the respondents learned about the courses from the VSB flyer, six read about them in the SUN, one learned about them from the PROVINCE and one heard about them from a friend. The respondents rated their instructors and the courses as follows:

	Unacceptable 1	Poor 2	Fair 3	Good 4	Excellent 5
Instructor (n=15)	0	1	4	9	1
Course (n=14)	0	2	7	5	0

Ten respondents rated their instructor as "good" or "excellent" while only five rated the course similarily. Seven respondents commented on what it was about the course they liked -

- computer time available (4),
- very informative as an introduction into programming (2),
- well informed instructor (1), and
- twice a week (1).

...42

and 11 commented on what it was about the course that they disliked -

- no textbook/handbook until later in the course (8),
- not enough individual instruction (2),
- length of course rather short (2),
- crowded classroom/not enough time on machine (2), and
- no continuity in course content (1).

Five respondents commented on other classes that they would like to see offered; three mentioned programming.

ii. SPECIFIC EVALUATION

General Information

Fifty-five night school students completed a survey designed to evaluate their experience with the microcomputer lab. The following provides a breakdown of the respondents by course:

Course	Number of Respondents
Introduction to Microcomputers	10
Microcomputer II	25
Data Processing II	20

Twenty-four of the 55 respondents heard about the program by reading about it in the SUN, four read about it in the PROVINCE, 20 learned of it from the VSB flyer, and six heard about the program from friends.

Expectations

All 55 night school respondents commented on what they expected to learn by taking the course. Their expectations are summarized as follows:

- programming a computer/how to write programs (21),
- programming/how to write programs in BASIC (16),
- operation of a computer/running programs (16),
- general knowledge/basic understanding of computers (10),
- familiarity/confidence with computers (4),
- computer language/terminology (3),
- applications of computers (2), and
- other expectations (3).

Forty-five of the 55 night school respondents indicated that the course met their expectations, seven indicated that the course did not meet their expectations and three did not respond. Thirty-four respondents gave some reasons for their responses:

Positive

- can now operate a microcomputer (7),
- now have basic understanding of principles of programming (6),
- now have basic understanding of computers (2),
- feel good about course/enjoyed course (3),
- gave a good explanation of BASIC (2), and
- other positive reasons (7);

Negative

- spent too much time on machine orientation (2), and
- other negative reasons (7).

Rating of Instructor and Course

The respondents rated their instructors and their courses as follows:

	Unacceptable 1	Poor 2	Fair 3	Good 4	Excellent 5
Instructor (n=50)	0	1	3	34	12
Course (n=55)	0	1	14	33	7

Forty-six respondents rated their instructors as "good" or "excellent" and 40 rated the courses as "good" or "excellent". Only one respondent rated the instructor and course as "poor". The instructors were rated more highly than the courses.

Timing/Location/Class Size

Ten night school respondents attended their course one night per week and 45 attended their classes two nights per week. This timing posed a problem for 11 of the night school respondents. Thirteen respondents commented on the timing -

Classes twice per week

- not enough time between classes to study/integrate what has been learned (3),
- a lot of information to absorb in (short) amount of time/once per week would have allowed better digestion (3),
- difficult to manage two nights per week (2),
- other problems (5).

Having the course in an elementary school posed a problem for four respondents only; two commented that the chairs and tables were too small and four "other" comments were made. Twenty-eight respondents indicated that they had had enough individual time on the microcomputer, 24 reported that they had not had sufficient time and three did not respond. Thirteen respondents reported that they would be willing to pay more to have more individual access to the computers and five indicated that they would not be willing to pay more. Other comments include:

- limit the enrollment to one student per terminal (5),
- have time available for practice (3),
- there should be slightly more space between terminals/not enough elbow room (2), and
- other comments (3).

.....44

Equipment

Eight night school respondents indicated that the hardware did not perform satisfactorily and five indicated that they experienced problems with the software. Ten respondents commented on the problems they experienced with the hardware; six reported difficulties arising from three terminals to one disk drive and printer and four made "other" comments. Eleven respondents suggested improvements to the equipment; eight suggested additional disk drives and printers and three made "other" suggestions.

Improvements to the Courses

Twenty-eight of the 55 night school respondents suggested improvements to the courses. Their suggestions have been summarized as follows:

* provide a textbook/manual/handbook (7),
* more organized/sequential information from instructor (4),
* more handouts/supplementary reading materials (4),
* smaller class size (4),
* longer/more hours (3),
* video tapes/films on subject (2), and
* other suggestions (8).

Future Computer Course Plans

Thrity-five of the 55 night school respondents were planning to take other computer courses from the VSB and 24 were planning to take computer courses from other agencies. Thirty-one respondents commented as follows on the other computer courses that they would like to see offered:

* more advanced levels of same course (15),
* other languages, e.g., COBOL, PASCAL, FORTRAN (4),
* more of the same level (3),
* business computing/programming (2),
* graphics (2),
* other suggestions (7).

Other Comments

Fifteen night school respondents made some other comments. Five commented on the good job done by the instructors. Some examples of other comments are cited:

"My appetite has been stimulated -- need more info."

"I found the contact with co-students and especially with the teachers very stimulating and therefore I will gladly volunteer with the personal assistance in the next course if so desired."

"Instructor tended to teach using computer jargon for explanation."

"Despite all the constructive suggestions I have listed above, I am very glad that the VSB is offering evening computer courses, and I wholeheartedly support the VSB in its endeavour!"